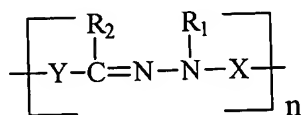


CLAIMS

What is claimed is:

1. An organophotoreceptor comprising an electrically conductive substrate and a photoconductive element on the electrically conductive substrate, the photoconductive element comprising:

(a) a charge transport material having the formula



where X is a linking group having the formula $-(\text{CH}_2)_m-$, branched or linear, where m is an integer between 0 and 20, inclusive, and one or more of the methylene groups is optionally replaced by O, S, C=O, O=S=O, a heterocyclic group, an aromatic group, urethane, urea, an ester group, a NR_3 group, a CHR_4 group, or a CR_5R_6 group where R_3 , R_4 , R_5 , and R_6 are, independently, H, hydroxyl group, thiol group, an alkyl group, an alkaryl group, a heterocyclic group, or an aryl group;

R_1 and R_2 are independently a hydrogen, a halogen, an alkyl group, an aryl group, an alkaryl group, an aromatic group or a heterocyclic group;

Y is an aromatic group; and

n is a distribution of integer values greater than 2; and

(b) a charge generating compound.

2. An organophotoreceptor according to claim 1 wherein the photoconductive element further comprises an electron transport compound.

3. An organophotoreceptor according to claim 1 wherein Y comprises an N,N-disubstituted arylamine.

4. An organophotoreceptor according to claim 3 wherein the (N,N-disubstituted)arylamine group is a p-(N,N-disubstituted)arylamine group.

5. An organophotoreceptor according to claim 3 wherein the (N,N-disubstituted)arylamine group comprises a triphenyl amine group, a carbazole group or a julolidine group.

5 6. An organophotoreceptor according to claim 1 wherein the photoconductive element further comprises a polymer binder.

7. An organophotoreceptor according to claim 6 wherein the polymer binder is crosslinked with the charge transport material.

10

8. An organophotoreceptor according to claim 7 wherein the polymer binder and charge transport compound are crosslinked through a crosslinking agent.

9. An organophotoreceptor according to claim 1 wherein the charge transport
15 material comprises an epoxy linkage.

10. An organophotoreceptor according to claim 9 wherein a crosslinking agent is bonded between the epoxy linkage and the polymer binder.

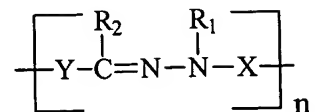
20 11. An organophotoreceptor according to claim 1 wherein the R₁ group is a phenyl group and R₂ is a hydrogen.

12. An electrophotographic imaging apparatus comprising:

(a) a light imaging component; and

25 (b) an organophotoreceptor oriented to receive light from the light imaging component, the organophotoreceptor comprising an electrically conductive substrate and a photoconductive element on the electrically conductive substrate, the photoconductive element comprising:

(i) a charge transport compound having the formula



where X is a linking group having the formula $-(\text{CH}_2)_m-$, branched or linear, where m is an integer between 0 and 20, inclusive, and one or more of the methylene groups is optionally replaced by O, S, C=O, O=S=O, a heterocyclic group, an aromatic group, urethane, urea, an ester group, a NR_3 group, a CHR_4 group, or a CR_5R_6 group where R_3 , R_4 , R_5 , and R_6 are, independently, H, hydroxyl group, thiol group, an alkyl group, an alkaryl group, a heterocyclic group, or an aryl group;

R_1 and R_2 are independently a hydrogen, a halogen, an alkyl group, an aryl group, an alkaryl group, an aromatic group or a heterocyclic group;

Y is an aromatic group; and

n is a distribution of integer values greater than 2; and

(ii) a charge generating compound.

13. An electrophotographic imaging apparatus according to claim 12 wherein Y comprises an N,N-disubstituted arylamine.

14. An electrophotographic imaging apparatus according to claim 13 wherein the (N,N-disubstituted)arylamine group comprises a triphenyl amine group, a carbazole group or a julolidine group.

15. An electrophotographic imaging apparatus according to claim 12 wherein the photoconductive element further comprises an electron transport compound.

16. An electrophotographic imaging apparatus according to claim 12 wherein the photoconductive element further comprises a binder.

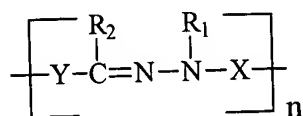
17. An electrophotographic imaging apparatus according to claim 12 wherein the binder is crosslinked with the charge transport material.

18. An electrophotographic imaging apparatus according to claim 17 wherein a crosslinking agent forms chemical crosslinks between the charge transport material and the binder.

5 19. An electrophotographic imaging apparatus according to claim 12 further comprising a liquid toner dispenser.

20. An electrophotographic imaging process comprising:
(a) applying an electrical charge to a surface of an organophotoreceptor
10 comprising an electrically conductive substrate and a photoconductive element on the electrically conductive substrate, the photoconductive element comprising:

(i) a charge transport compound having the formula



where X is a linking group having the formula $-(\text{CH}_2)_m-$, branched or linear, where m is
15 an integer between 0 and 20, inclusive, and one or more of the methylene groups is optionally replaced by O, S, C=O, O=S=O, a heterocyclic group, an aromatic group, urethane, urea, an ester group, a NR_3 group, a CHR_4 group, or a CR_5R_6 group where R_3 , R_4 , R_5 , and R_6 are, independently, H, hydroxyl group, thiol group, an alkyl group, an alkaryl group, a heterocyclic group, or an aryl group;

20 R_1 and R_2 are independently a hydrogen, a halogen, an alkyl group, an aryl group, an alkaryl group, an aromatic group or a heterocyclic group;

Y is an aromatic group; and

n is a distribution of integer values greater than 2; and

(ii) a charge generating compound;

25 (b) imagewise exposing the surface of the organophotoreceptor to radiation to dissipate charge in selected areas and thereby form a pattern of charged and uncharged areas on the surface;

(c) contacting the surface with a toner to create a toned image; and

(d) transferring the toned image to a substrate.

21. An electrophotographic imaging process according to claim 20 wherein Y comprises an N,N-disubstituted arylamine.

5 22. An electrophotographic imaging process according to claim 20 wherein the photoconductive element further comprises an electron transport compound.

23. An electrophotographic imaging process according to claim 20 wherein the photoconductive element further comprises a polymer binder.

10

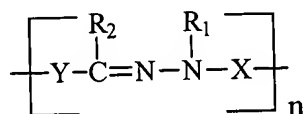
24. An electrophotographic imaging process according to claim 23 wherein the binder is crosslinked with the charge transport material.

25. An electrophotographic imaging process according to claim 24 wherein a
15 crosslinking agent links the polymer binder and the charge transport material.

26. An electrophotographic imaging process according to claim 20 wherein the toner comprises a liquid toner comprising a dispersion of colorant particles in an organic liquid.

20

27. A charge transport material having the formula:



where X is a linking group having the formula $-(\text{CH}_2)_m-$, branched or linear, where m is an integer between 0 and 20, inclusive, and one or more of the methylene groups is
25 optionally replaced by O, S, C=O, O=S=O, a heterocyclic group, an aromatic group, urethane, urea, an ester group, a NR_3 group, a CHR_4 group, or a CR_5R_6 group where R_3 , R_4 , R_5 , and R_6 are, independently, H, hydroxyl group, thiol group, an alkyl group, an alkaryl group, a heterocyclic group, or an aryl group;

R_1 and R_2 are independently a hydrogen, a halogen, an alkyl group, an aryl group, an alkaryl group, an aromatic group or a heterocyclic group;

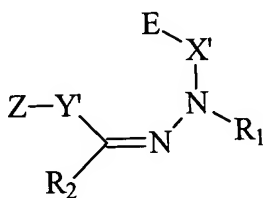
Y is an aromatic group; and

n is a distribution of integer values greater than 2.

5

28. A charge transport compound according to claim 27 wherein Y comprises an N,N-disubstituted arylamine.

29. A method for forming a polymer charge transport material, the method
10 comprising polymerizing a monomer with the formula:



where X' is a linking group having the formula $-(\text{CH}_2)_m-$, branched or linear, where m is an integer between 0 and 20, inclusive, and one or more of the methylene groups is
15 optionally replaced by O, S, C=O, O=S=O, a heterocyclic group, an aromatic group, urethane, urea, an ester group, a NR_3 group, a CHR_4 group, or a CR_5R_6 group where R_3 , R_4 , R_5 , and R_6 are, independently, H, hydroxyl group, thiol group, an alkyl group, an alkaryl group, a heterocyclic group, or an aryl group;

R_1 and R_2 are independently a hydrogen, a halogen, an alkyl group, an aryl group,
20 an alkaryl group, an aromatic group or a heterocyclic group;

Y' is an aromatic group;

Z is a first reactive functional group; and

E is a second reactive functional group that can covalently bond with the reactive functional group Z under appropriate reaction conditions.

25

30. A method according to claim 29 wherein Y' comprises an N,N-disubstituted arylamine.

31. A method according to claim 29 wherein E comprises an epoxy group.

32. A method according to claim 31 wherein Z is selected from the group consisting of hydroxyl, thiol, amino (primary amino or secondary amino), a carboxyl
5 group and a combination thereof.

33. A method according to claim 29 further comprising crosslinking the polymer with a polymer binder.

10 34. A method according to claim 33 wherein the crosslinking is performed with a crosslinking agent.

35. A method according to claim 29 wherein the polymerization is performed in solution with a polymer binder.

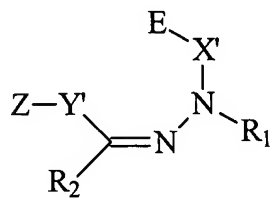
15

36. A method according to claim 35 wherein the polymer binder comprises a functional group that bonds with E or Z.

20 37. A method according to claim 35 wherein the solution further comprises a crosslinking agent that bonds with the monomer and with the polymer binder.

38. A method according to claim 29 wherein polymerization is initiated by the adjustment of the pH, the temperature, the concentration or a combination thereof.

25 39. A polyfunctional compound having the formula:



where X' is a linking group having the formula $-(\text{CH}_2)_m-$, branched or linear, where m is an integer between 0 and 20, inclusive, and one or more of the methylene groups is

optionally replaced by O, S, C=O, O=S=O, a heterocyclic group, an aromatic group, urethane, urea, an ester group, a NR_3 group, a CHR_4 group, or a CR_5R_6 group where R_3 , R_4 , R_5 , and R_6 are, independently, H, hydroxyl group, thiol group, an alkyl group, an alkaryl group, a heterocyclic group, or an aryl group;

5 R_1 and R_2 are independently a hydrogen, a halogen, an alkyl group, an aryl group, an alkaryl group, an aromatic group or a heterocyclic group;

Y' is an aromatic group;

Z is a first reactive functional group; and

E is a second reactive functional group that can covalently bond with the reactive

10 functional group Z under appropriate reaction conditions.

40. A compound according to claim 39 wherein Y' comprises an N,N-disubstituted arylamine.

15